DoD Workshop on M&S for Logistics and Sustainment

Army Modeling and Simulation Briefing

John Gillis

1 September 2009

Welcome

Welcome to Modeling and Simulation World

Agenda

- How Does the Army Play in the M&S World
- Army Efforts reference OSD LCM Memo
- ASA(ALT) Recommendations and HQDA G-8 AMSO Sponsored Logistic Capability Area Team (CAT)

DoD Modeling & Simulation (M&S) Governance

UNCLASSIFIED

[Effective July 24, 2009 SC meeting]

M&S Management Structure Organized by Communities.
Designed to Support & Integrate M&S Activities across the Department.
Led by a 1 to 2 Star M&S Steering Committee (M&S SC) to provide governance.

Acquisition	Analysis	Experimentation	Intelligence	Planning	Testing	Training
AT&L	CAPE & JS	JFCOM	USD(I)	JS & Policy	DOT&E & AT&L	P&R

M&S Practices

Corporate & Crosscutting M&S Tools

Corporate & Crosscutting M&S Data

Corporate & Crosscutting M&S Services

(SE FORUM) (JADM) (JCDE EC) (DIMSCG) (AP EXCOM) (T2 ESG)

Components

OSD, Joint Staff, COCOMs, Services

Goal: Establish corporate M&S management to address DoD goals: Leads/guides/shepherds the $Bs in DoD M&S investments; adds value thru metrics & ROI-driven priorities; and seeks to provide transparency.

DoD Acquisition M&S Work Group

Industry

SISO, OMG, etc.

INCOSE

NDIA
SE Division

MAS, SE DSIG, etc.

INCOSE MBSE WG

NDIA
M&S Committee

DoD Acquisition

Chair: Mr. Gordon Kranz
ODUSD(A&T)/DDR&E

Systems & Software Engineering Forum

Acquisition M&S Working Group

Chair: Col Eileen Bjorkman, USAF
Chief, M&S Policy Division
SAF/XCDM

DoD M&S

Mr. Nic Torelli
Acquisition Member:
ODUSD(A&T)/DDR&E

M&S SC

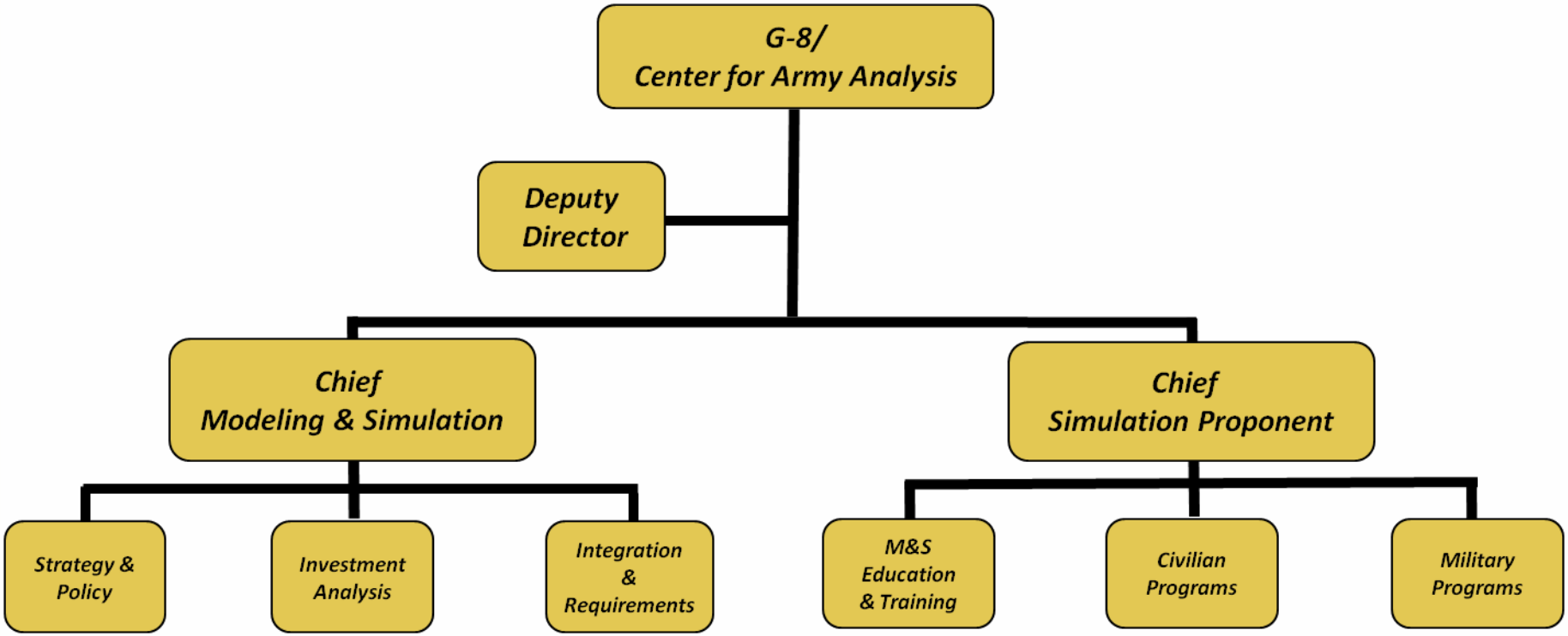
M&S IPT

Mr. Mike Truelove
Acquisition Member:
ODUSD(A&T)/DDR&E

AMSWG Charter (SE Forum, 2006)

- Assist PMs and acquisition professionals by improving the utility of M&S . . .
- Address common concerns, improve info flow, align technical initiatives, pursue cross-cutting issue resolution . . .
- Represent the acquisition community in DoD M&S deliberations . . .

AMSO Organization



- ***Formulate and execute a coherent, unified Army M&S Strategy.***
- ***Monitor, prioritize and recommend Army M&S investments for operational gaps.***
- ***Serve as the authoritative Army M&S interface to DoD, Joint and International fora.***

- ***Create a fully trained Army M&S workforce.***
- ***Manage the M&S workforce to best meet the Army's warfighting needs.***
- ***Integrate M&S education, training, and workforce development with DoD, Joint, Industry, and Academia.***

The Current Army M&S Environment

- Diverse Army processes are enabled by a variety of largely capable M&S.
- Demands and reliance on M&S are increasing.
- Must keep pace with changes in the Operating Environment (e.g., Counter Insurgency, Knowledge Management, Irregular Warfare), Generating Force and Future Force technologies and capabilities.
- Serious M&S capability gaps have widened over the past decade largely due to dwindling funds to fill capability gaps and failure to exploit operational data and commercial technical advances.
- Effective management and integration remains a challenge

Dynamic and invaluable M&S enterprise must embrace a more disciplined and collaborative approach to ensure that our M&S are relevant and suitable to meet Army-wide needs.

M&S Governance Structure

VCSA

Army DCS G-8

- Approves Army Requirements
- Army M&S Proponent
- Chairs M&S GOSC

ARMY M&S GENERAL OFFICER STEERING COMMITTEE (M&S GOSC)

- Provides strategic vision and oversight
- Includes Domain Managers & Agents, M&S Community Representatives, and Capability Area Teams
- Meets as required

ARMY MODELING & SIMULATION OFFICE

- Leads integration of M&S with Cross-Command Collaborative Environment
- Provides Army-wide M&S infrastructure support
- Executes FA57/CP36 Proponent mission
- Advises Senior leaders on M&S resourcing
- Promotes Common M&S tools
- Develops, promulgates Army's M&S policy

ARMY M&S COUNCIL OF COLONELS

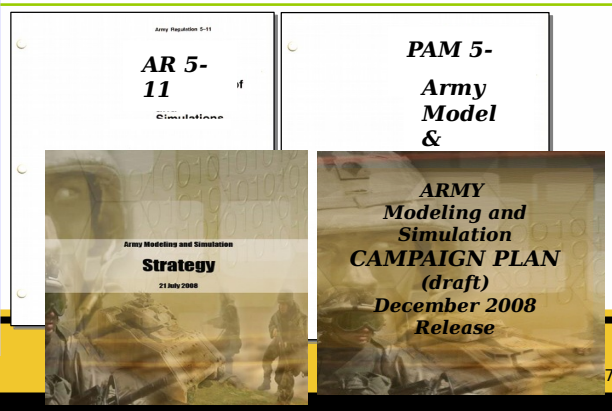
- Coordinates M&S management
- Executes M&S Strategy
- Implements M&S Campaign Plan
- Resolves issues
- Meets quarterly or as required

DOMAIN MANAGERS

DCS,G3/5/7 (DAMO-TR)	DCS, G3/5/7 (DAMO-CI)	ASA/ALT (SAAL-ZS)
DOMAIN AGENTS	DOMAIN AGENTS	DOMAIN AGENTS
Tng, Exercise & Mil Ops	Adv Concepts & Requirements	Research, Dev, & Acq.

DOMAIN AGENTS

- Represents M&S Users and Developers
- Provides management review for M&S development and infrastructure
- Meets at the call of the AMSO
- Develops and maintains plans for Domains



M&S Efforts

- Promulgate policy, standards, and Verification, Validation, and Accreditation (VV&A)
- Determine value and size of Army M&S
- Represent current operations with improved Irregular Warfare modeling
- Develop an M&S data strategy that more credibly models the current operating and generating forces
- Provide focal point for joint and coalition partners to enable M&S interoperability for operations planning and execution
- Align M&S and operational geospatial standards to support M&S use with battle command systems
- Prepare and defend MDEP submissions to include OneSAF

Headquarters, Department of the Army

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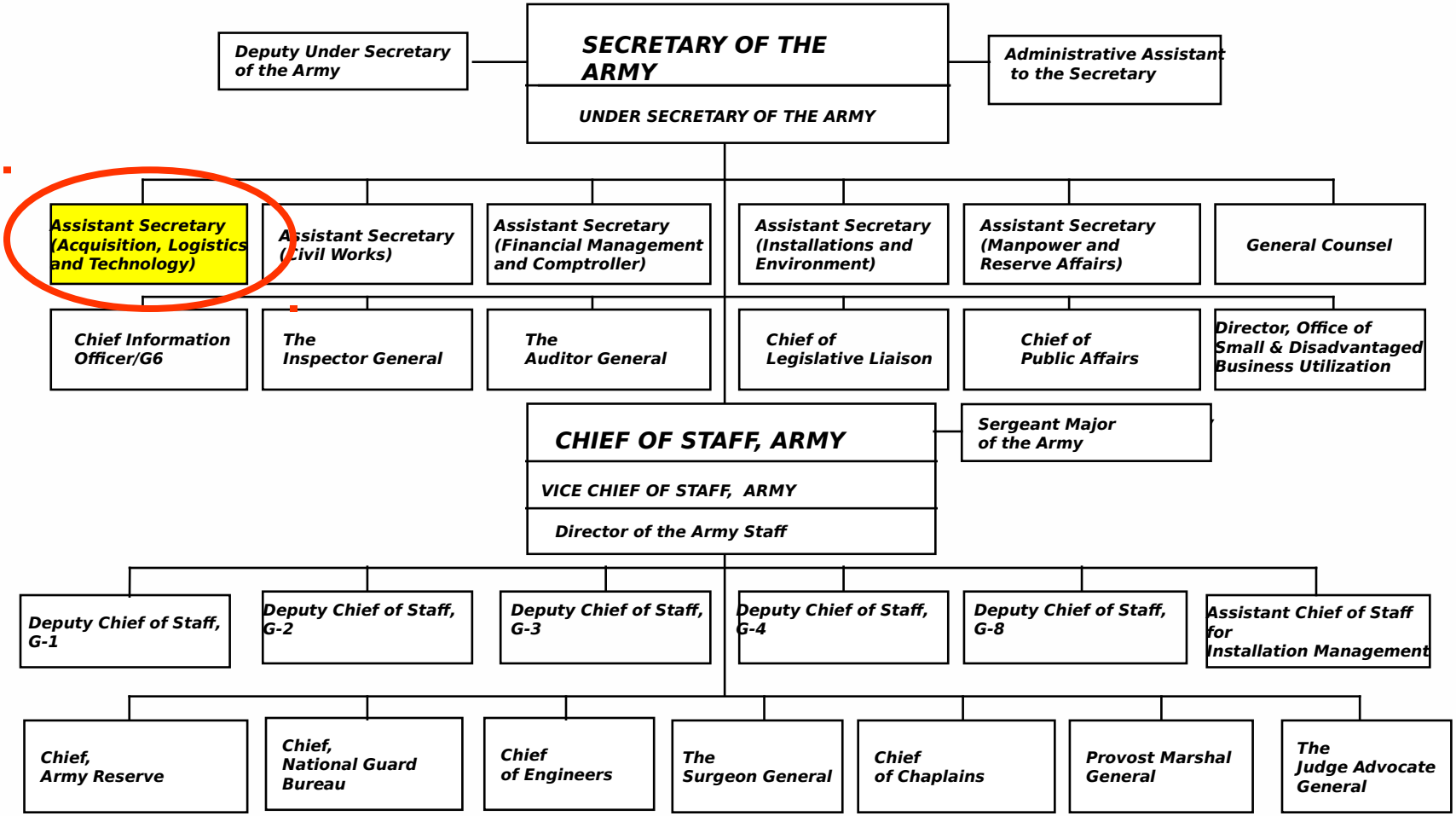
Deputy Under Secretary of the Army
SECRETARY OF THE ARMY
UNDER SECRETARY OF THE ARMY
Administrative Assistant to the Secretary
Assistant Secretary (Acquisition, Logistics and Technology)
Assistant Secretary (Civil Works)
Assistant Secretary (Financial Management and Comptroller)
Assistant Secretary (Installations and Environment)
Assistant Secretary (Manpower and Reserve Affairs)
General Counsel
Chief Information Officer/G6
The Inspector General
The Auditor General
Chief of Legislative Liaison
Chief of Public Affairs
Director, Office of Small & Disadvantaged Business Utilization
CHIEF OF STAFF, ARMY
VICE CHIEF OF STAFF, ARMY
Director of the Army Staff
Sergeant Major of the Army
Deputy Chief of Staff, G-1
Deputy Chief of Staff, G-2
Deputy Chief of Staff, G-3
Deputy Chief of Staff, G-4
Deputy Chief of Staff, G-8
Assistant Chief of Staff for Installation Management
Chief, Army Reserve
Chief, National Guard Bureau
Chief of Engineers
The Surgeon General
Chief of Chaplains
Provost Marshal General
The Judge Advocate General

ASSISTANT SECRETARY OF THE ARMY ACQUISITION, LOGISTICS AND TECHNOLOGY

UNCLASSIFIED

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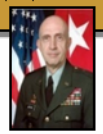

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Acting Deputy for Medical Systems
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COL Martin
Director Medical Systems

NOTE: By law, PEO's have direct access, and report directly to the Army Acquisition Executive in connection with all program matters.

This is not an official Organizational Chart

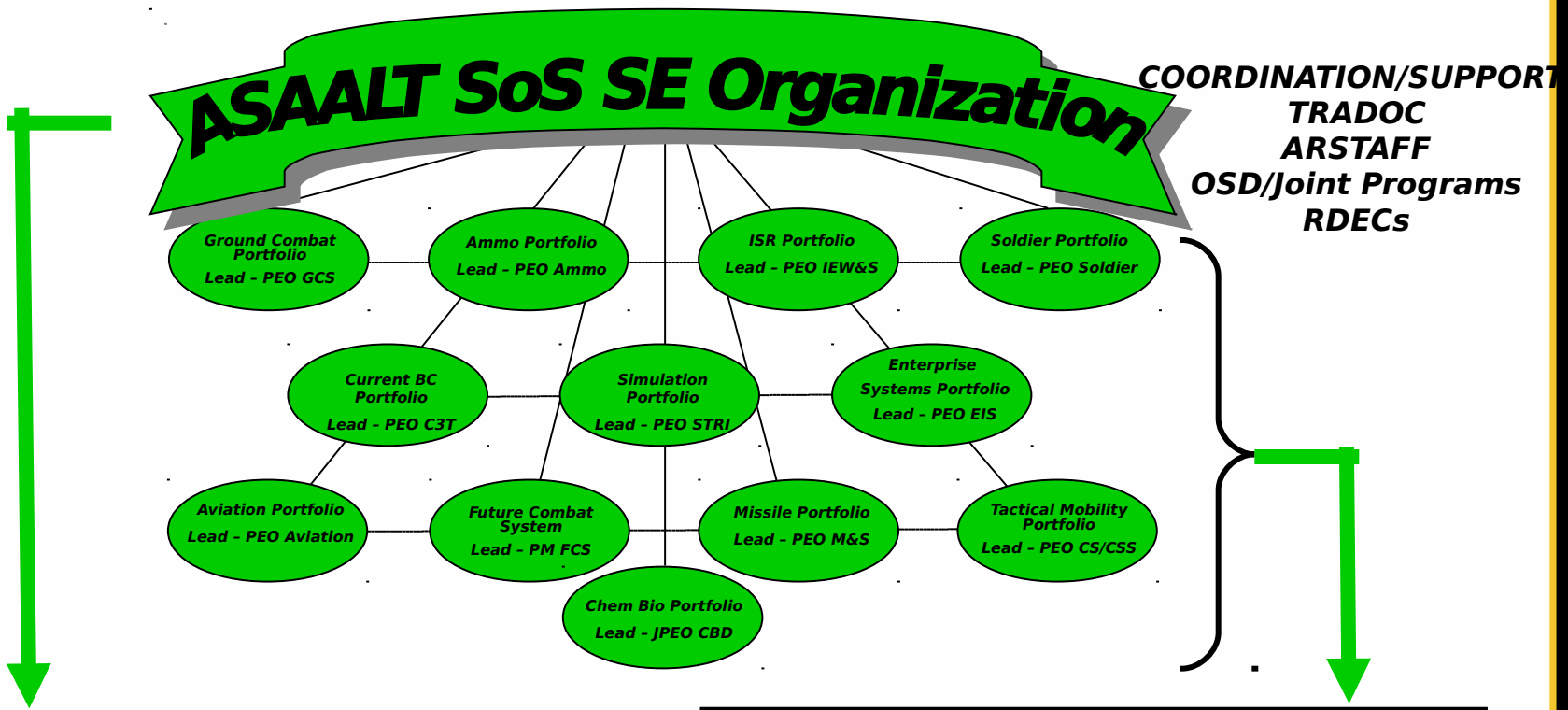
Jacqueline T. Banks
Chief, Management Support

DATE: DRAFT 17 April 2009

- *Provides advice and assistance to the ASA(ALT)*

***Deputy for Medical systems. Receives acquisition oversight but reports to the Surgeon General*

SoS SE and PEO Relationship



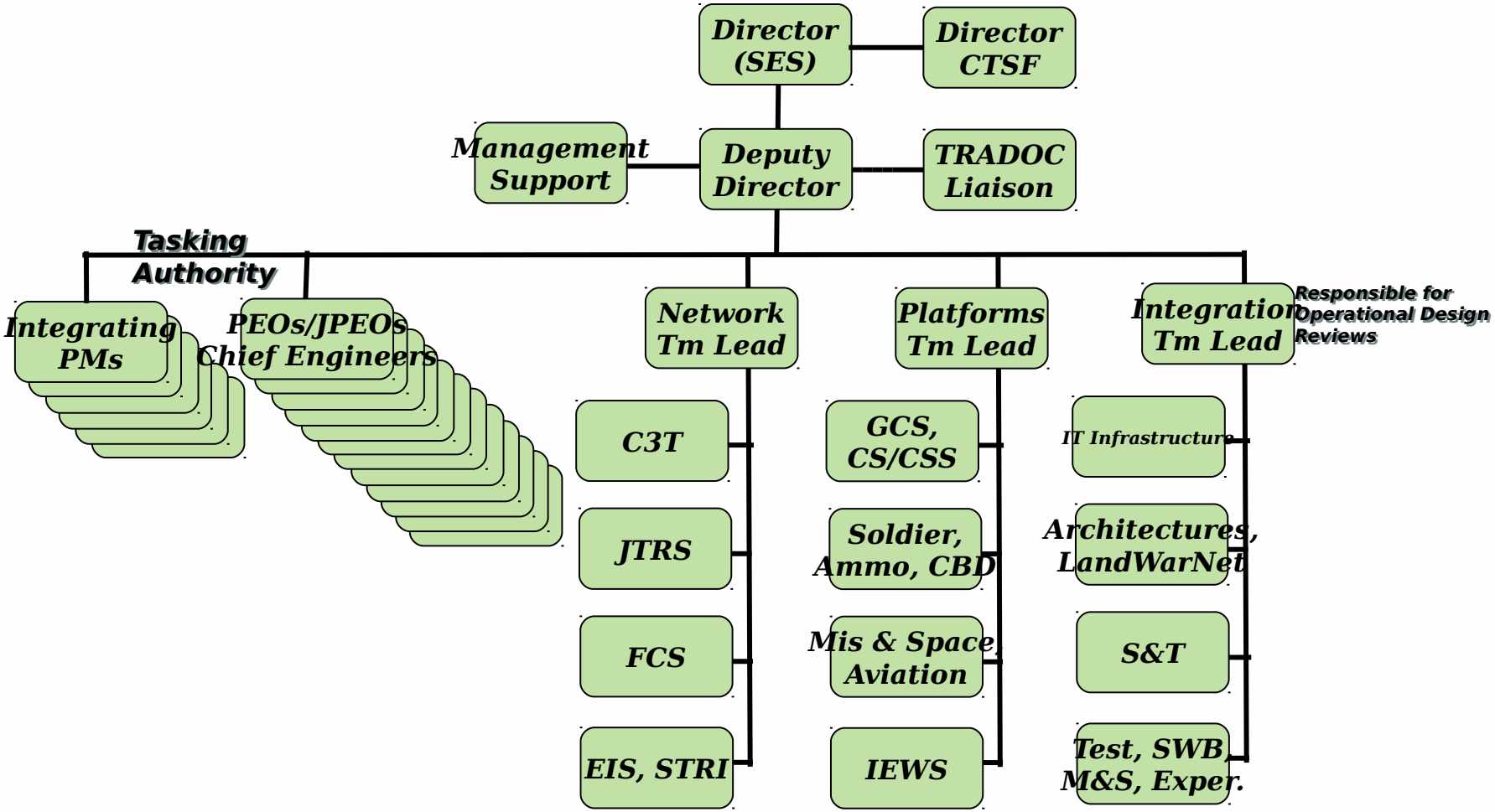
ASA (AL&T) SoS Systems Engineering

- *Policy*
- *Oversight*
- *Enterprise level system architectures*
- *Enterprise level analysis, evaluations, trade studies – End-to-end performance*
- *Synchronize enterprise level development*
- *Identify and resolve cross-portfolio issues*

PEO Portfolio SoS Engineering

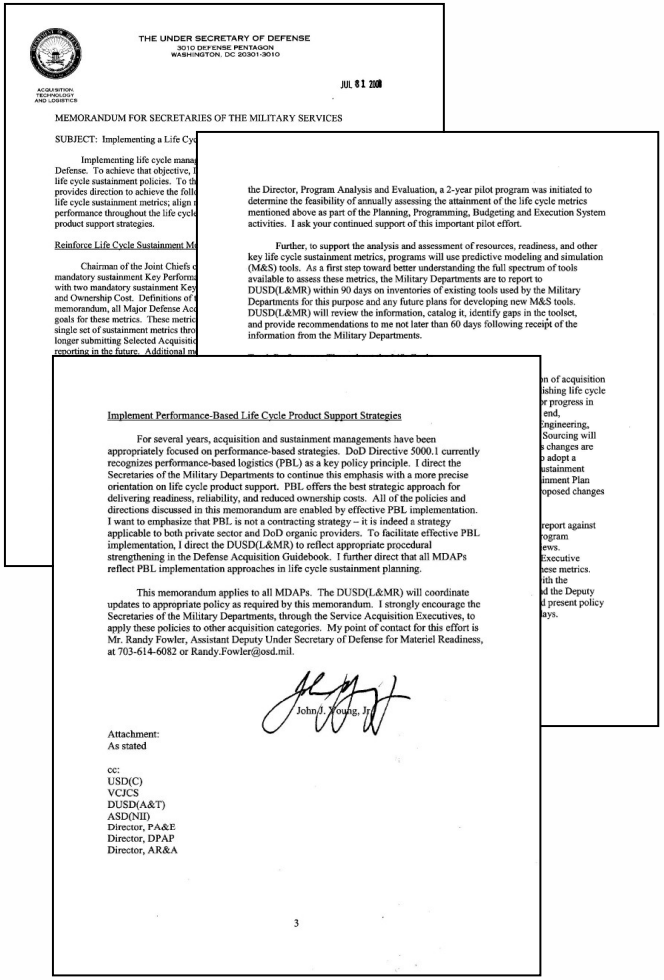
- *Oversight of POR*
- *Portfolio level architecture (to include cross-portfolio requirements)*
- *Portfolio level analysis, evaluations, and trade studies*
- *SoS responsibilities - Works to resolve cross-domain issues*
- *PEO - Lead*
- *RDEC, FFRDC, SETA - Support*

SoS SE Organization - DRAFT



LCM Memo

1. Reinforce Life Cycle Sustainment Metrics
2. Align Resources to Readiness
3. Track Performance Throughout the Life Cycle
4. Implement Performance-Based Life Cycle Product Support Strategies



THE UNDER SECRETARY OF DEFENSE
3010 DEFENSE PENTAGON
WASHINGTON, DC 20301-3010

ACQUISITION, TECHNOLOGY AND LOGISTICS

JUL 01 2008

MEMORANDUM FOR SECRETARIES OF THE MILITARY SERVICES

SUBJECT: Implementing a Life Cyc

Implementing life cycle mana
Defense. To achieve that objective,
life cycle sustainment policies. To th
provides direction to achieve the follo
life cycle sustainment metrics; align
performance throughout the life cycle
product support strategies.

Reinforce Life Cycle Sustainment M

Chairman of the Joint Chiefs
mandatory sustainment Key Performa
with two mandatory sustainment Key
and Ownership Cost. Definitions of
memorandum, all Major Defense Ac
goals for these metrics. These metric
single set of sustainment metrics thro
longer submitting Selected Acquisiti
reporting in the future. Additional m

the Director, Program Analysis and Evaluation, a 2-year pilot program was initiated to determine the feasibility of annually assessing the attainment of the life cycle metrics mentioned above as part of the Planning, Programming, Budgeting and Execution System activities. I ask your continued support of this important pilot effort.

Further, to support the analysis and assessment of resources, readiness, and other key life cycle sustainment metrics, programs will use predictive modeling and simulation (M&S) tools. As a first step toward better understanding the full spectrum of tools available to assess these metrics, the Military Departments are to report to DUSD(L&MR) within 90 days on inventories of existing tools used by the Military Departments for this purpose and any future plans for developing new M&S tools. DUSD(L&MR) will review the information, catalog it, identify gaps in the toolset, and provide recommendations to me not later than 60 days following receipt of the information from the Military Departments.

Implement Performance-Based Life Cycle Product Support Strategies

For several years, acquisition and sustainment managements have been appropriately focused on performance-based strategies. DoD Directive 5000.1 currently recognizes performance-based logistics (PBL) as a key policy principle. I direct the Secretaries of the Military Departments to continue this emphasis with a more precise orientation on life cycle product support. PBL offers the best strategic approach for delivering readiness, reliability, and reduced ownership costs. All of the policies and directions discussed in this memorandum are enabled by effective PBL implementation. I want to emphasize that PBL is not a contracting strategy – it is indeed a strategy applicable to both private sector and DoD organic providers. To facilitate effective PBL implementation, I direct the DUSD(L&MR) to reflect appropriate procedural strengthening in the Defense Acquisition Guidebook. I further direct that all MDAPs reflect PBL implementation approaches in life cycle sustainment planning.

This memorandum applies to all MDAPs. The DUSD(L&MR) will coordinate updates to appropriate policy as required by this memorandum. I strongly encourage the Secretaries of the Military Departments, through the Service Acquisition Executives, to apply these policies to other acquisition categories. My point of contact for this effort is Mr. Randy Fowler, Assistant Deputy Under Secretary of Defense for Materiel Readiness, at 703-614-6082 or Randy.Fowler@osd.mil.

John J. Young, Jr.

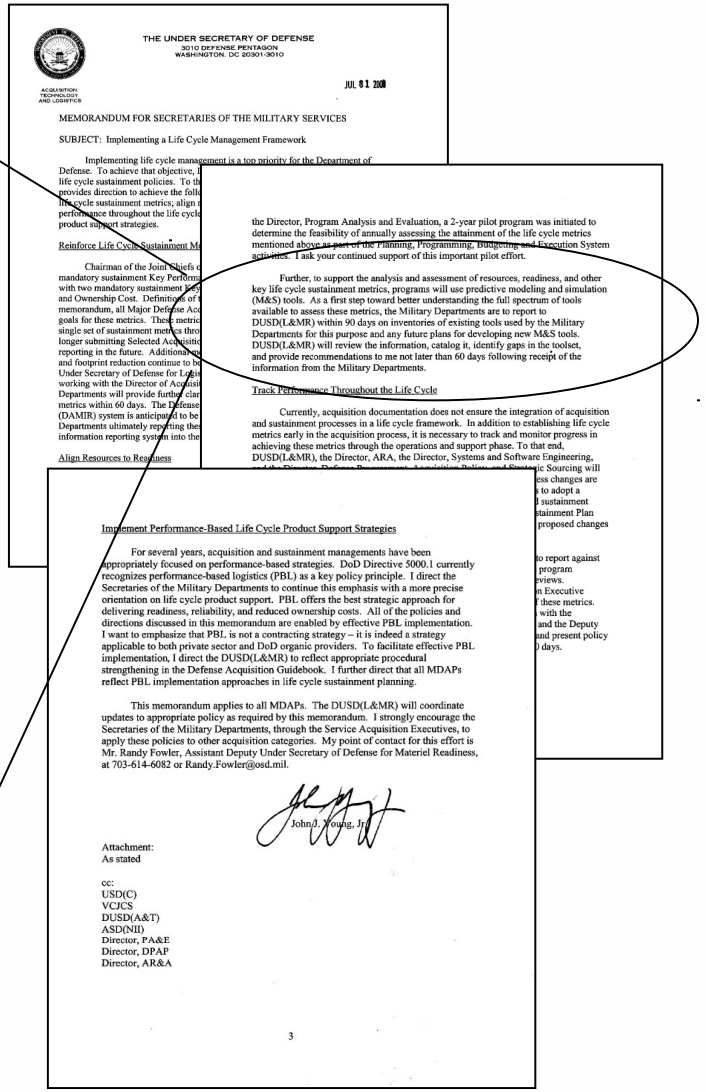
Attachment:
As stated

cc:
USD(C)
VCJCS
DUSD(A&T)
ASD(NII)
Director, PA&E
Director, DPAP
Director, AR&A

3

M&S Task in LCM Memo

- Programs will use predictive M&S tools to assess life cycle sustainment metrics
- Within 90 days, Military Departments must report to L&MR on inventories of existing tools ***used for this purpose*** and future plans for developing tools
- L&MR will review the information, catalog it, identify gaps in the toolset, and provide recommendations to AT&L 60 days after receipt of the information



THE UNDER SECRETARY OF DEFENSE
3010 DEFENSE PENTAGON
WASHINGTON, DC 20301-3010

ACQUISITION, TECHNOLOGY AND LOGISTICS

JUL 31 2008

MEMORANDUM FOR SECRETARIES OF THE MILITARY SERVICES

SUBJECT: Implementing a Life Cycle Management Framework

Implementing life cycle management is a top priority for the Department of Defense. To achieve that objective, I ... life cycle sustainment policies. To th... provides direction to achieve the follo... life cycle sustainment metrics; align t... performance throughout the life cycle... product support strategies.

Reinforce Life Cycle Sustainment Me...

Chairman of the Joint Chiefs o... mandatory sustainment Key Perform... with two mandatory sustainment Key... and Ownership Cost. Definitions of t... memorandum, all Major Defense Acq... goals for these metrics. These metrics... single set of sustainment metrics thro... longer submitting Selected Acquisitio... reporting in the future. Additional g... and footprint reduction continue to be... Under Secretary of Defense for Logis... working with the Director of Acquisi... Departments will provide further clar... metrics within 60 days. The Defense... (DAMIR) system is anticipated to be... Departments ultimately reporting the... information reporting system into the...

Align Resources to Readiness

the Director, Program Analysis and Evaluation, a 2-year pilot program was initiated to determine the feasibility of annually assessing the attainment of the life cycle metrics mentioned above as part of the Planning, Programming, Budgeting and Execution System activities. I ask your continued support of this important pilot effort.

Further, to support the analysis and assessment of resources, readiness, and other key life cycle sustainment metrics, programs will use predictive modeling and simulation (M&S) tools. As a first step toward better understanding the full spectrum of tools available to assess these metrics, the Military Departments are to report to DUSD(L&MR) within 90 days on inventories of existing tools used by the Military Departments for this purpose and any future plans for developing new M&S tools. DUSD(L&MR) will review the information, catalog it, identify gaps in the toolset, and provide recommendations to me not later than 60 days following receipt of the information from the Military Departments.

Track Performance Throughout the Life Cycle

Currently, acquisition documentation does not ensure the integration of acquisition and sustainment processes in a life cycle framework. In addition to establishing life cycle metrics early in the acquisition process, it is necessary to track and monitor progress in achieving these metrics through the operations and support phase. To that end, DUSD(L&MR), the Director, ARA, the Director, Systems and Software Engineering, ...

Implement Performance-Based Life Cycle Product Support Strategies

For several years, acquisition and sustainment managements have been appropriately focused on performance-based strategies. DoD Directive 5000.1 currently recognizes performance-based logistics (PBL) as a key policy principle. I direct the Secretaries of the Military Departments to continue this emphasis with a more precise orientation on life cycle product support. PBL offers the best strategic approach for delivering readiness, reliability, and reduced ownership costs. All of the policies and directions discussed in this memorandum are enabled by effective PBL implementation. I want to emphasize that PBL is not a contracting strategy -- it is indeed a strategy applicable to both private sector and DoD organic providers. To facilitate effective PBL implementation, I direct the DUSD(L&MR) to reflect appropriate procedural strengthening in the Defense Acquisition Guidebook. I further direct that all MDAPs reflect PBL implementation approaches in life cycle sustainment planning.

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John J. Young, Jr.

Attachment:
As stated

cc:
USD(C)
VCJCS
DUSD(A&T)
ASD(NII)
Director, PA&E
Director, DPAP
Director, AR&A

3

Army Memo

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY OF THE ARMY
ACQUISITION LOGISTICS AND TECHNOLOGY
103 ARMY PENTAGON
WASHINGTON DC 20310-0103

OCT 0 1 2008

SAAL-LP

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Implementing a Life Cycle Management Framework-Modeling and Simulation

The Under Secretary of Defense for Acqusition, Technology and Logistics memorandum dated July 31, 2008, subject as above, directs that Sevices are to report within 90 days their inventories of existing modeling and simulation (M&S) tools and future plans for M&S tools used to support the analysis and assessment of acquisition and sustainment life cycle metrics that may support or apply to Major Defense Acquistion Programs.

To that end, all addressees shall report their relevant M&S tool inventories and future plans using the enclosed spreadsheet and format no later than October 20, 2008 to the point of contact below. Also ensure that you update the Army Modeling and Simulation Resource Repository (MSRR) maintained by the Deputy Chief of Staff, G-3/5/7 DAMO-MS (Army Modeling and Simulation Directorate). Negative replies are requested.

The point of contact for reporting is Mr. Larry W. Hill, commercial (703) 604-7450, DSN 664-7450, or e-mail: larry.w.hill1@us.army.mil. The point of contact for the MSRR is William Duval, commercial (703) 601-0011, DSN 329-0011, or e-mail: william,duval@us.army.mil.

Dean G. Popps
Principal Deputy Assistant Secretary of the Army
(Acquisition, Logistics and Technology)

Enclosure

DISTRIBUTION:
COMMANDERS:
U.S. ARMY FORCES COMMAND
U.S. ARMY MATERIEL COMMAND
U.S. ARMY TRAINING AND DOCTRINE COMMAND
U.S. ARMY SPECIAL OPERATIONS COMMAND
MILITARY SURFACE DEPLOYMENT AND DISTRIBUTION COMMAND

Army Major Defense Acquisition Programs

UNCLASSIFIED

#	FCB	SHORT NAME	ACAT
1	BA	SKY WARRIOR	ID
2	CC	FBCB2	IC
3	L	BLACKHAWK UPGRADE (UH-60M)	1D
4	L	CH-47F	1C
5	L	FMTV	1C
6	L	JCA	1D
7	L	LUH	1C
8	FA	AB3	1D
9	FA	ARH	1D
10	FA	BRADLEY UPGRADE	1C
11	FA	EXCALIBUR	1C
12	FA	FCS	1D
13	FA	GMLRS	1C
14	FA	HIMARS	1C
15	FA	LONGBOW APACHE	1C
16	FA	STRYKER	1D
17	P	ATRICM/CMWS	1C
18	P	CHEM DEMIL- ACWA	1D
19	P	CHEM DEMIL- CMA	1D
20	P	JLENS	1D
21	P	PATRIOT/MEADS CAP	1D
22	P	PATRIOT PAC-3	1C
23	NC	WIN-T INCR 1	1D
24	NC	WIN-T INCR 2	1D
25	NC	WIN-T INCR 3	1D

Army Results from Army MSRR and Staffing

UNCLASSIFIED

Breakdown reveals:

Total submissions: 152
Strong/Likely MDAP LCSM Alignment: 87
Doubtful/No MDAP LCSM Alignment: 61
Unknown/Missing Info: 4

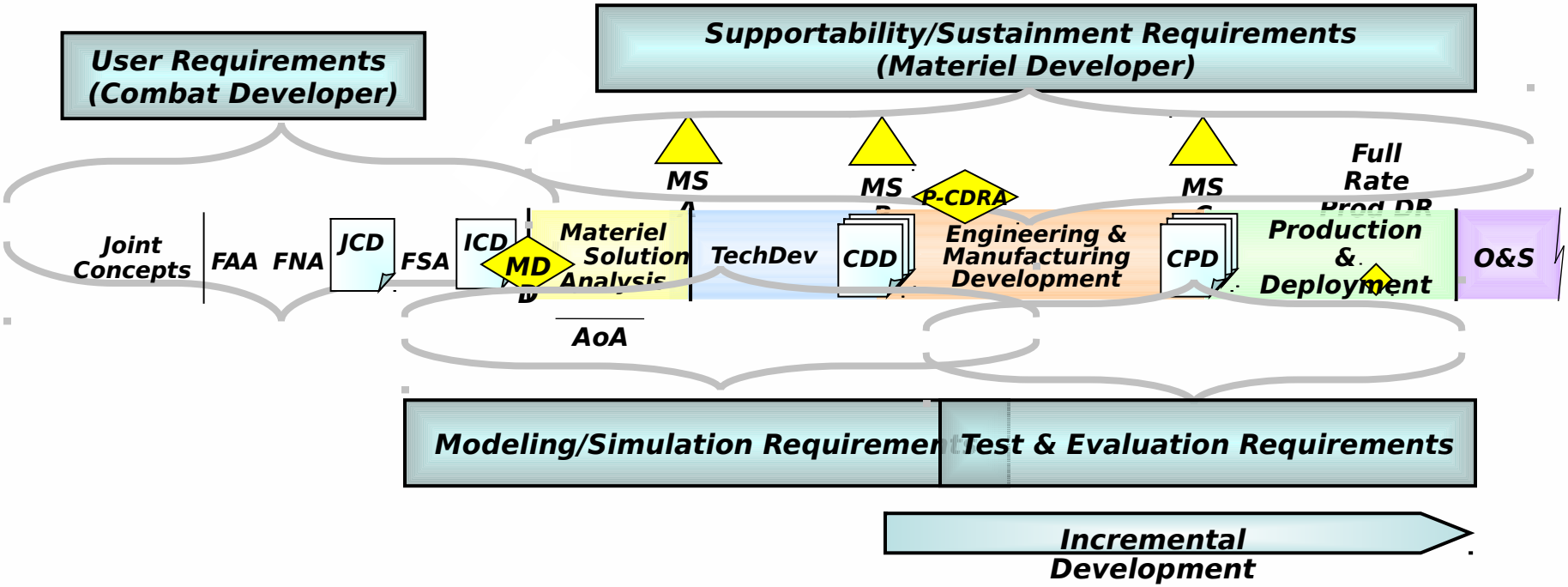
Multiple 'Strong/Likely MDAP LCSM Alignment' (√) entries show you the amount of repeated use throughout the inventory submissions. This include the following tools usage amounts:

- ***Automated Cost Estimate – Integrated Tool (ACE-IT): 4***
- ***Computerized Optimization Model For Predicting and Analyzing Support Structure (COMPASS): 7***
- ***Cost Analysis Strategy and Assessment Model (CASA): 2***
- ***Logistics Cost Estimating Tool (LCET): 4***
- ***Optimum Stock Requirements Analysis Program (OSRAP): 2***
- ***Scenario Manager: 2***
- ***Selected Essential Item Stockage for Availability Methodology (SESAME): 7***
- ***Selected Essential Stock for Availability Method Life Cycle Cost Model (SESLCC): 2***
- ***System of Systems Analysis Tool Set (SOSAT***
- ***System of Systems Availability Model (SOSA***

ASA(ALT) Recommendations And HQDA G-8 Army M&S Office Sponsored Logistics CAT

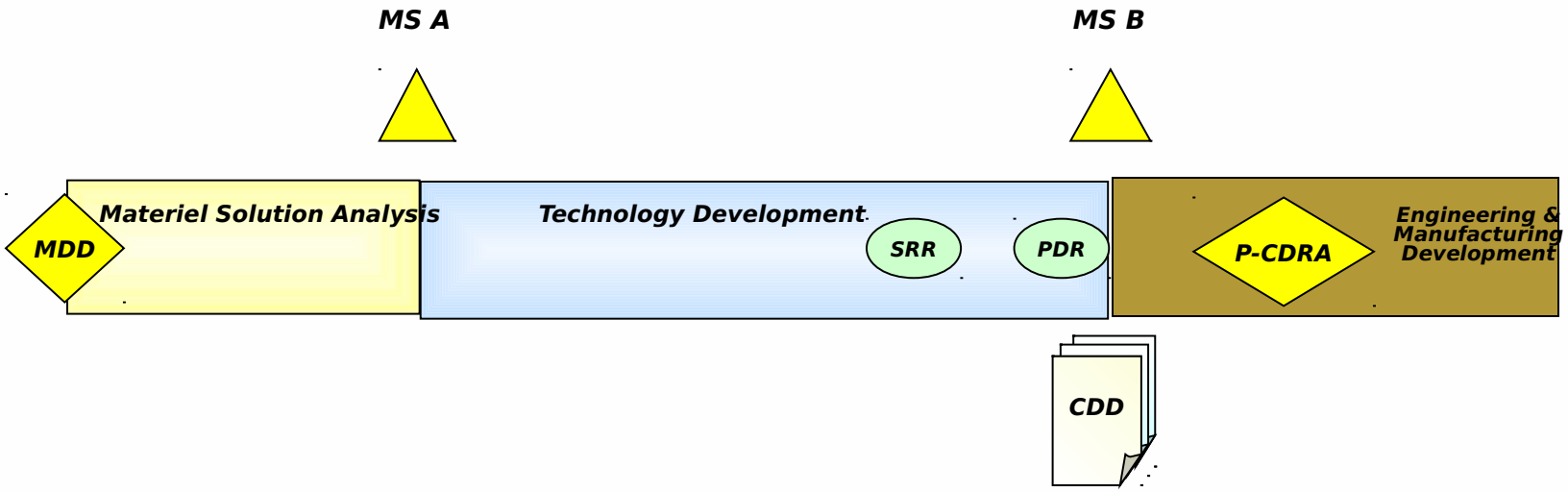
DASA (APL)

Recommendation(s): ***Exploit the new DoDI 5000.02 pre-MS B MDD, Materiel Solution Analysis (MSA) Phase/AoA, and Tech Dev Phase Prototype requirements where the capabilities/requirements community (combat developer) determines Ao and Rm requirements. Concurrently and subsequently, the acquisition (materiel developer), modeling & simulation, and T&E communities translate collaborate to translate them into Am and Ownership Cost that can be modeled/simulated, tested/evaluated, and reported throughout the life cycle.***

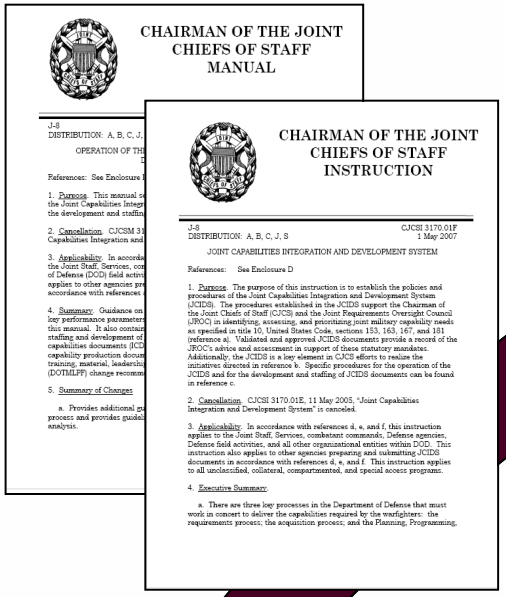


DASA (APL)

Recommendations (cont.)*.** ***The primary target of opportunity for DASA (APL) and the AT&L community to influence sustainment and supportability considerations is between MDD and P-CDRA (see below) while closely monitoring and reviewing LCSMs and LCSP at subsequent sustainment 'gates' and milestones throughout the life cycle.



Recent Policy Refinements


CHAIRMAN OF THE JOINT CHIEFS OF STAFF MANUAL

J-8
DISTRIBUTION: A, B, C, J,

OPERATION OF TH

References: See Enclosure

1. Purpose. This manual
the Joint Capabilities Integ
the development and staffi

2. Cancellation. CJCSM 3
Capabilities Integration and

3. Applicability. In accorda
the Joint Staff, Services, co
of Defense (DOD) field activi
applies to other agencies pr
accordance with references

4. Summary. Guidance on
key performance parameter
this manual. It also contair
staffing and development of
capabilities documents (ICD
capability production docum
training, materiel, leadershi
(DOTMLPF) change recomm

5. Summary of Changes

a. Provides additional gu
process and provides guidel
analysis.

CHAIRMAN OF THE JOINT CHIEFS OF STAFF INSTRUCTION

J-8
DISTRIBUTION: A, B, C, J, S

CJCSI 3170.01F
1 May 2007

JOINT CAPABILITIES INTEGRATION AND DEVELOPMENT SYSTEM

References: See Enclosure D

1. Purpose. The purpose of this instruction is to establish the policies and procedures of the Joint Capabilities Integration and Development System (JCIDS). The procedures established in the JCIDS support the Chairman of the Joint Chiefs of Staff (CJCS) and the Joint Requirements Oversight Council (JROC) in identifying, assessing, and prioritizing joint military capability needs as specified in title 10, United States Code, sections 153, 163, 167, and 181 (reference a). Validated and approved JCIDS documents provide a record of the JROC's advice and assessment in support of these statutory mandates. Additionally, the JCIDS is a key element in CJCS efforts to realize the initiatives directed in reference b. Specific procedures for the operation of the JCIDS and for the development and staffing of JCIDS documents can be found in reference c.

2. Cancellation. CJCSI 3170.01E, 11 May 2005, "Joint Capabilities Integration and Development System" is canceled.

3. Applicability. In accordance with references d, e, and f, this instruction applies to the Joint Staff, Services, combatant commands, Defense agencies, Defense field activities, and all other organizational entities within DOD. This instruction also applies to other agencies preparing and submitting JCIDS documents in accordance with references d, e, and f. This instruction applies to all unclassified, collateral, compartmented, and special access programs.

4. Executive Summary.

a. There are three key processes in the Department of Defense that must work in concert to deliver the capabilities required by the warfighters: the requirements process; the acquisition process; and the Planning, Programming,

Joint Chiefs of Staff Policy:
(1 March 09)
CJCSM 3170.01G
CJCSI 3170.01F

Mandatory Key Performance Parameters (KPP)

- *Force Protection & Survivability*
- ***SUSTAINMENT***
- *Net-Ready*
- *System Training*
- *Energy Efficiency*

MATERIEL AVAILABILITY

Materiel Reliability

Ownership Cost

Mandatory Key System Attributes

While Materiel Availability is the Key Sustainment metric its basis is in the Materiel Reliability and Ownership Cost KSAs.

CAT Purpose and Guiding Principles

Purpose

- Identify and prioritize Army M&S capability gaps and associated M&S functionality gaps within its Army capability area; recommends solutions to ARSTAF Principal.

Guiding Principles

- Aligned with Army and Joint Capability Areas.
- Responds directly to its associated Army ARSTAF Principal. Unaligned with any specific M&S agency.
- Develops and maintains an awareness of the current state of Army M&S functionality with respect to its Capability Area.
- Uses a structured process to identify and prioritize M&S Gaps within its Army capability area.
- Develops recommended solutions to overcome identified M&S Gaps.
  - Ensures M&S solutions are responsive to the Army's current and future needs.
  - Solutions are targeted for a selected set of Army M&S; are concrete and are useful.
- CAT members maintain SA over solution execution providing update to respective ARSTAF Principal.

M&S CAT Activity Status

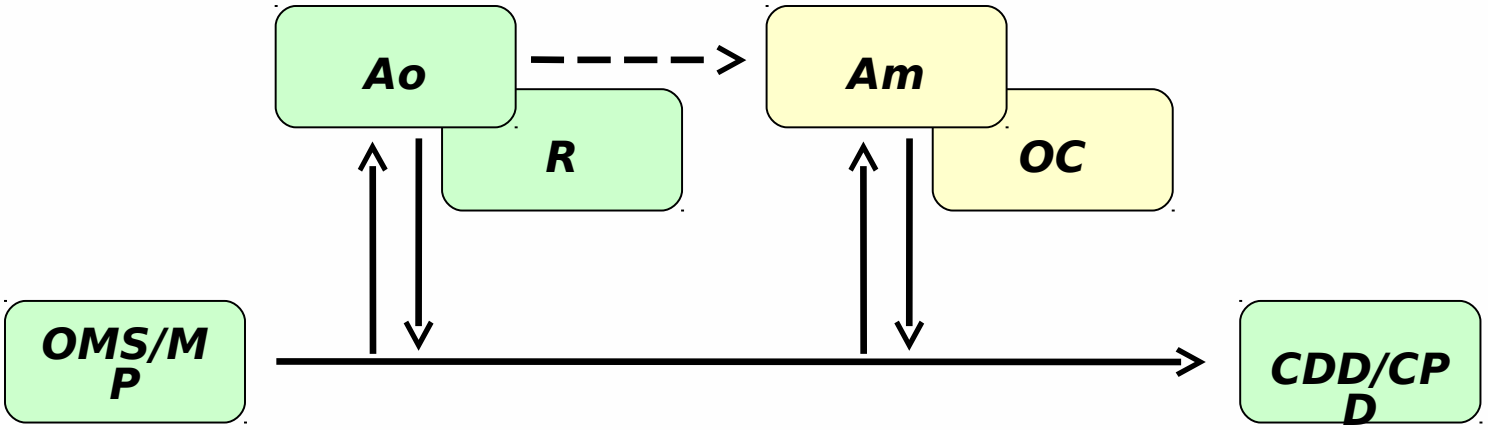
As of 9 June 2009	ACTIVITY STATUS	CHAIR
LOGISTICS DCS G-4 LTG Stevenson	Preparing draft Final Results Brief.	Mr. Michael Byrd
FORCES SUPPORT ACSIM / DCS G-1 LTG Wilson LTG Rochelle	Initial meeting conducted between ACSIM/G1, recommended invite MEDCOM representative for next meeting (TBD) to underpin Force Support charter development process.	Mr. Eric Yi COL Kent Miller
INTELLIGENCE DCS G-2 LTG Zahner	Two official Intel CAT meetings conducted; but key Intelligence M&S stakeholders meet at least every two months in forums such as Intelligence M&S Stakeholder meetings and G-2 M&S Funding IPRs. Over the last two years, we have funded or leveraged funding for 16 efforts totaling over $28M to address gaps in three Intelligence M&S objectives: legacy to objective simulation transition, realistic ISR representation, and complex environment representation. We are working on a methodology to cross-walk ISR-related CNA to Army Intelligence Campaign Plan (AICP) objectives to derive specific Intelligence M&S capability gaps.	Mr. Gary Phillips Mr. Johnny Jackson
LANDWARNET CIO/G-6 - DCS G-3/5/7 LTG Sorenson LTG Thurman	- Two meetings conducted - Continuing to work the analysis process to underpin G-3 LandWarNet's capability set development process.	Mr. Christopher Morey
OPERATIONS DCS G-3/5/7 LTG Thurman	- Conducted initial meeting - Many issues were identified that need to be resolved pertaining to the CAT's scope. As exiting language in M&S Strategy is unclear as to overlap of the CAT with current ACR and TEMO Domains (and possibly the LANDWARNET CAT),	Mr. David Thomen
CROSS-		

ASA(ALT)/AMC/ARCIC/AMSAA/PEOs Ao vs Mo

Backup

Reliability, Availability and Maintainability *

Requirements ISO Materiel Development
Implementation of CJCS 3170M JCIDS (Feb 09)



TRADOC Responsibility

ASA(ALT) Responsibility

***OMS/MP** – Operational Mode Summary / Mission Profile*
***Ao** – Operational Availability*
***R** – Reliability*
***CDD** – Capability Development Document*
***CPD** – Capability Production Document*

***Am** – Materiel Availability*
***OC** – Ownership Cost*

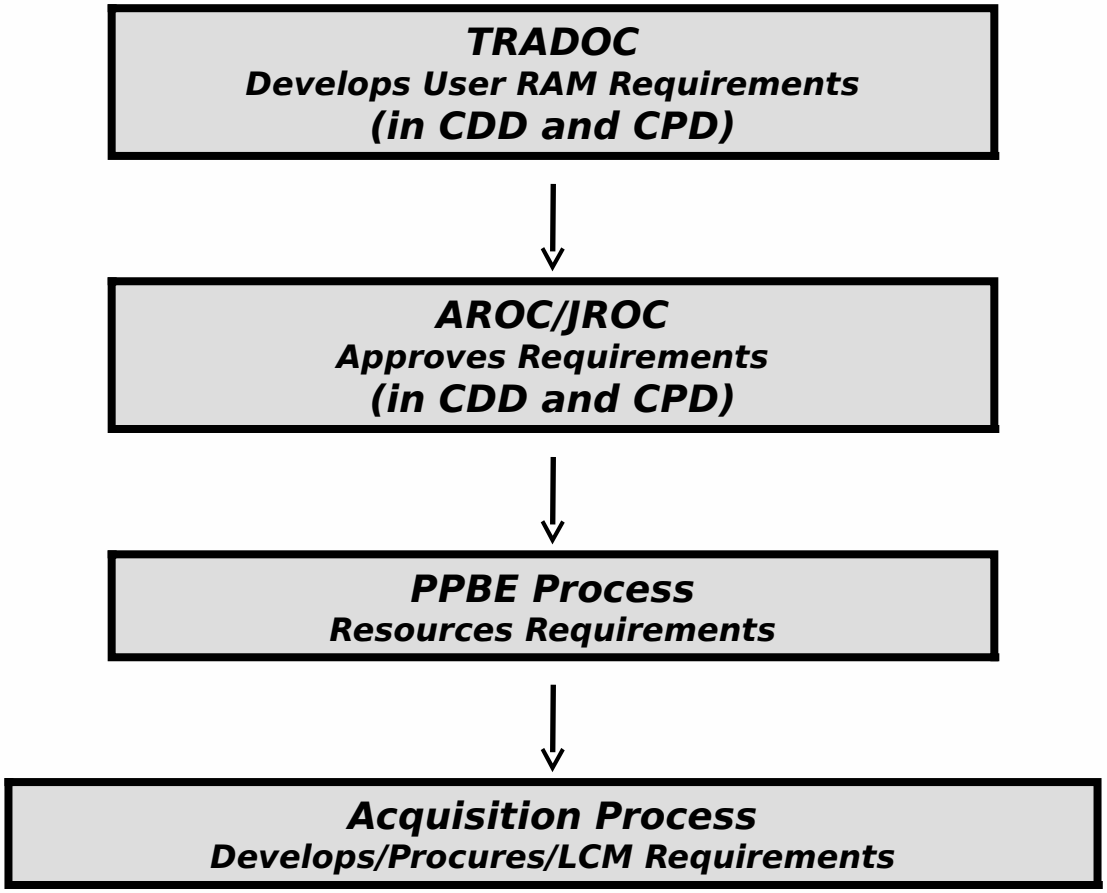
***Reference TRADOC ARCIC Backup Slides**

ATEC/AMSAA

Recommendation(s):

- ***AR 70-1, Army Acquisition Policy: Recommends use of availability M&S in 6-5.d. Revise language to mandate use of M&S for evaluation of Am and Ao when availability is a KPP.***
  - ***Make corresponding changes to PAM 70-3.***
- ***AR 73-1, T&E Policy: Generic M&S discussion in 3-1. Revise language as above. In addition, address model development, VV&A, and analytical underpinning of model inputs that do not come from test.***
  - ***Make corresponding changes to PAM 73-1***
- ***AR 700-127, ILS: Already addresses Ao and Am.***
- ***Institute policy (which regulation?) that when availability is a KPP, M&S gets started as part of AoA?***
- ***Write M&S guide based on Am-Ao White Paper.***

RAM Requirements



RAM – Reliability, Availability and Maintainability

RAM Requirements Development Process Overview

INITIAL ANALYSES/ BUILDING BLOCKS

Organization Design
- Unit/Combat Team
- Number of

OMS/MP
- Operating Time
- Terrain Profile
- Mileage
- Conditions
- Environment

Mission Parameters
- Combat Power
- Productivity

MISSION ASSESSMENT

Analysis
- Combat Models
  - JANUS
  - JCATS
  - BEWSS
  - CASTFOREM
  - VIC
- Throughput Analysis
  - Excel
  - Arena
  - Mathematica

Operational Requirements & Constraints
- Operational Needs
  - Unit Success Requirements
  - Minimum System Requirements
- Operational Constraints
  - Number of Maintainers
  - Production or Training Throughput Reqts
- Operational Insights

SUSTAINMENT ANALYSES

RAM ANALYSIS
- Logistics Modeling
  - Arena
  - LORIMRR
- Probability Analysis
  - Mathcad or Mathematica
  - Excel

LOG BURDEN ANALYSIS
- Maintenance
  - Maintenance Ratio
  - Number of Mechanics
  - Full spectrum, includes Unit Assets, CLS, Industry
- Repair Parts
  - Weight/Cube
  - Distribution
- Support Concept
  - PBL considerations
  - Higher Level Maintenance

T - Testable
A - Achievable
O - Operationally Relevant

Reliability (KSA)
- Prob of mission success

Availability (KPP)
- Equipment Readiness
- Operational Availability

Maintainability
- Maintenance Ratio
- Down Time

KPP = Key Performance Parameter

PROPOSED REQUIREMENTS

ASSESSMENT
- Technology
- Risk
- Cost
- Schedule
- Test & Evaluation

REQUIREMENTS FEASIBLE?

No

Yes

FINALIZE RAM REQUIREMENTS

for INPUT to CAPABILITIES DOCUMENT

Initial Analysis/ Building Blocks

INITIAL ANALYSES/ BUILDING BLOCKS

Organization Design
- *Unit/Combat Team*
- *Number of*

OMS/MP
- *Operating Time*
- *Terrain Profile*
- *Mileage*
- *Conditions*
- *Environment*

Mission Parameters
- *Combat Power*
- *Productivity*

OMS/MP = Operational Mode Summary / Mission Profile

- ***Provides details necessary to support Mission Assessment and Sustainment Analyses, including:***
  - ✓ ***Force design structure (system quantities at different echelons)***
  - ✓ ***Envisioned logistics structure and support concept***
  - ✓ ***System usage rates during wartime operations and peacetime sustainment training***
- ***Provides mission success parameters and insights that drive RAM requirements development***
- ***For non-combat systems, identifies throughput or production requirements needed for mission accomplishment***
- ***Provides proponent's insights into operational concept that drive RAM and Logistics considerations***

Mission Assessment

MISSION ASSESSMENT

Analysis
- *Combat Models*
  - *JANUS*
  - *JCATS*
  - *BEWSS*
  - *CASTFOREM*
  - *VIC*

In the process of being updated

- *Throughput Analysis*
  - *Excel*
  - *Arena*
  - *Mathematica*

Requirements & Constraints
- *Operational Needs*
  - *Unit Success Requirements*
  - *Minimum System Requirements*
- *Operational Constraints*
  - *Number of Maintainers*
  - *Production or Training Throughput Reqts*
- *Operational Insights*

- ***Analysis from combat modeling identifies:***
  - ✓ ***Number of systems that must remain operational for mission success and/or follow-on operations***
  - ✓ ***Critical mission sets where high availability required***
- ***Throughput analysis for non-combat systems identifies:***
  - ✓ ***Average and peak throughput requirements for production systems (e.g., fuel transfer equipment, combat kitchens, water purification systems)***
  - ✓ ***Soldier training loads and/or annual training requirements for training devices, training aides, or training ammunition***
- ***Operational insights that may drive logistics constraints that impact RAM requirements such as:***
  - ✓ ***Resupply or repair actions can only be conducted during hasty defenses due to threat***
  - ✓ ***Time periods for resuppl and critic***

Sustainment Analyses

SUSTAINMENT ANALYSES

RAM ANALYSIS
- *Logistics Modeling*
  - *Arena*
  - *LORIMRR*
- *Probability Analysis*
  - *Mathcad or Mathematica*
  - *Excel*

LOG BURDEN ANALYSIS
- *Maintenance*
  - *Maintenance Ratio*
  - *Number of Mechanics*
  - *Full spectrum, includes Unit Assets, CLS, Industry*
- *Repair Parts*
  - *Weight/Cube*
  - *Distribution*
- *Support Concept*
  - *PBL considerations*
  - *Higher Level Maintenance*

LORIMRR = Logistical/Operational Readiness Impacts of Maintainability & Reliability Requirements
M&S = Modeling and Simulation
CLS = Contractor Logistics Support
PBL = Performance Based Logistics

- ***Sustainment Analyses provide the foundation that underpins the RAM requirements based on output from the Mission Assessment***

- ***RAM Analysis focuses on developing proposed RAM requirements that align with proponent operational requirements using the following tools:***
  - ✓ ***M&S tools like Arena or LORIMRR to evaluate reliability and maintainability within the expected force design and envisioned support concept (establishes minimum thresholds that align with operational concept)***
  - ✓ ***Computational tools like Excel, Mathcad, or Mathematica to evaluate probabilities of mission success, conduct training throughput analysis, and/or evaluate production efficiency***

- ***Logistics Burden Analysis focuses on repairs to a system given the envisioned logistics support concept and includes evaluation of:***
  - ✓ ***System's full maintenance burden (scheduled and unscheduled)***
  - ✓ ***Planned maintenance support (crew, [illegible])***

pposed RAM Requirements & Feasibility Review

PROPOSED RAM REQUIREMENTS

Reliability (KSA)
- *Prob of mission success*

Availability (KPP)
- *Equipment Readiness*
- *Operational Availability*

Maintainability
- *Maintenance Ratio*
- *Down Time Limitations*

Y REVIEW

- *Technology*
- *Risk*
- *Cost*
- *Schedule*
- *Test & Evaluation*

- ***Proposed RAM requirements are expressed in terms that are Testable, Achievable, and Operationally Relevant***
- ***RAM requirements are examined for feasibility with respect to:***
  - ✓ ***Technology – based on PM and AMSAA assessments***
  - ✓ ***Risk – based on PM and AMSAA assessment of cost and schedule***
  - ✓ ***Testability – based on ATEC assessment of test assets, cost, test time, and schedule***
- ***Feasibility review provides for collaboration among primary commands that are required to test, evaluate, and produce the system given the RAM requirements***

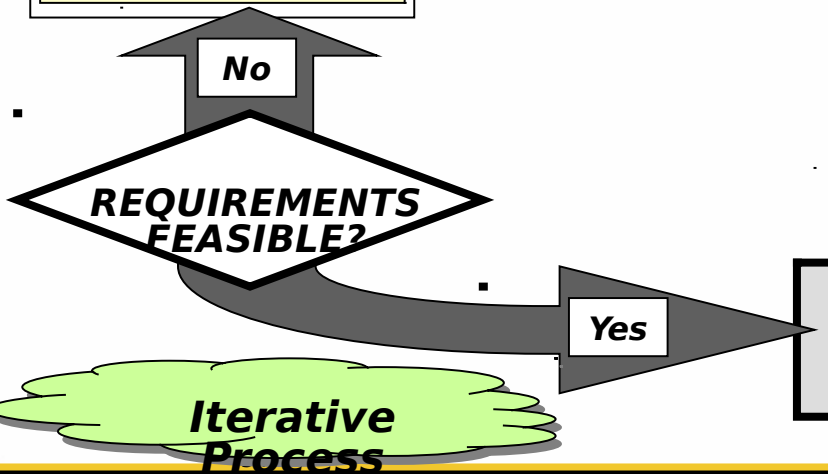
Final RAM Requirements

INITIAL ANALYSES/ BUILDING BLOCKS

Organization Design
- Unit/Combat Team
- Number of Systems
- O&O Plan
- Logistics Parameters

OMS/MP
- Operating Time
- Terrain Profile
- Mileage
- Conditions
- Environment

Mission Parameters
- Combat Power
- Productivity



- *If proposed RAM requirements deemed unfeasible, then changes may be required in one or more of the following:*
  - ✓ *OMS/MP – reduce usage rate*
  - ✓ *O&O Plan – increase unit quantities to mitigate lower reliability*
  - ✓ *Logistics Concept – adjust to accommodate additional maintainers, increased spares, or more rapid response to improve availability*
  - ✓ *Mission Parameters – re-examine minimum requirements necessary for mission success*
  - ✓ *Determine impact of changes through Supportability Analyses*
- *If requirements deemed feasible, then:*
  - ✓ *Insure requirements expressed in operational terms*
  - ✓ *Provide RAM requirements and associated rationale for input into the appropriate Capabilities Document*

FINALIZE RAM REQUIREMENTS for INPUT to CAPABILITIES DOCUMENT